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The University of Minnesota

The School of Agriculture

1906-1907



UNIVERSITY OF MINNESOTA

Announcement, 1907-1908

BULLETIN

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The School of Agriculture

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UNIVERSITY OF ILLINOIS

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The School of Agriculture

TIME OF OPENING.

The School of Agriculture will open Monday, October 7th, 1907, and close March 25th, 1908. The fall term closes at noon, Saturday, December 21st, and the winter term begins Thursday, January 2nd, 1908.

Instruction begins promptly at the opening of each term, and students are required to be present the first day of the term and to remain until the close of the term.

Students are advised to correspond with the registrar of the school, J. M. Drew, St. Anthony Park, St. Paul, Minnesota, prior to coming to the institution and to make the necessary preliminary arrangements for registration. Students registered in the fall term will not be received after the second day of the winter term, unless a reasonable excuse is presented for the delay.

LOCATION.

The School of Agriculture is located on University Farm, St. Anthony Park, St. Paul, Minnesota, about midway between the business portions of the cities of St. Paul and Minneapolis. Directions for reaching the school are given on page 4. The School of Agriculture is a part of the University of Minnesota and is governed by the University Board of Regents.

PURPOSE.

The School of Agriculture was organized in 1888 with the object of giving a practical education to the young men and women who are unable to pursue the full college course in agriculture. It offers a practical course of study designed to fit young men and young women for successful farm life, and aims to give to its students the necessary preparation for useful citizenship.

COURSE OF STUDY.

The course of study offered covers a wide range of subjects and is largely technical in character, but provision is made for some instruction in English and mathematics. The course is briefly outlined on pages 8 and 9. Instruction is given in the work shop, laboratories, barns and fields, as well as in the class room. The course requires three winters of six months each for completion, and is co-educational. Much of the

work is taken in common by the young men and the young women. Some of the subjects, such as blacksmithing, carpentry, field work, handling grain and machinery are taken by the young men, while the young women pursue cooking, sewing, laundering and household art. The methods of instruction tend to educate students toward the farm instead of away from it, and to develop in them a love for farm life by showing them its possibilities. In this respect the school has been very successful as over 80 per cent of its graduates continue agricultural pursuits.

HOW TO GET TO THE SCHOOL.

Check all baggage to St. Paul or Minneapolis.

Monday and Tuesday, October 7th and 8th, members of the Y. M. C. A., wearing lettered badges, will be at the Union Station in St. Paul, and at the Union, Milwaukee, Great Western, Soo and St. Louis Stations in Minneapolis, to meet and direct new students. Take the Como-Harriet or Como-Hopkins car from either St. Paul or Minneapolis and get off at Commonwealth avenue. A charge of 25 cents is made for transporting trunks at the opening of the school. No charge is made for the return of the baggage, at the close of school, provided it is ready to go on the days assigned.

ADMISSION.

All male students are required to have had six months' farm practice before entrance.

Parents are advised not to send pupils under fifteen years of age, unless they are unusually proficient in the common branches.

Students who have completed eighth grade work in the common schools are admitted without examination.

Applicants for admission who do not have state certificates or county diplomas showing completion of eighth grade work should send to the registrar for certificates of admission which, when properly filled out by former teachers or superintendents, will be accepted in place of entrance examinations.

Applicants whose home schools do not afford complete instruction in the common branches may be admitted with not more than two conditions which must be removed according to instructions given the student upon admission.

Students from city or grade schools will not be admitted until their former school records have been passed upon by the registrar. These records must be presented at least three weeks prior to the opening of the school.

State High School Board Certificates are accepted for work in English, physiology, algebra, geometry and civics.

HOME LIFE ON THE CAMPUS.

The life of the students while attending the School of Agriculture is subject to supervision.

Students residing in the school dormitories are not allowed to leave the grounds without permission.

The home life of each student is carefully guarded, and everything done to promote a healthful moral atmosphere.

The use of tobacco and of spirituous liquors of all kinds is strictly forbidden. No person will be admitted as a student who is known to have the cigarette habit.

Upon entrance students are provided with a copy of the rules and regulations to which they are required to subscribe.

Any one not in accord with these restrictions and not willing to lend a hand toward a strong moral growth should not come to the School of Agriculture.

CLASSIFICATION OF STUDENTS.

No student with incomplete C or preparatory work, or more than one incomplete B subject will be classified as an A, excepting high school graduates.

No student with incomplete preparatory work, or more than one incomplete C subject, excepting high school graduates, will be classified as a B.

No student with incomplete C or preparatory work will be made a commissioned military officer.

STUDENTS IN DORMITORIES.

The Principal of the School of Agriculture has charge of the boys in their dormitory and social life, and the Preceptress has charge of the girls in their dormitory and social life.

From 8:15 a. m. to 4:30 p. m. students not at recitations or chapel are expected to be in their rooms or the library studying or reading, also after 7 in the evening.

The rooms shall at all times be quiet, especially in the evening, so that no student may be disturbed.

The cadet officers shall make daily inspection of the boys' dormitories, under proper supervision of the instructors.

HOLIDAYS.

On Lincoln's birthday, February 12th, the regular classes of the last two periods in the forenoon will be omitted and a suitable program substituted.

There will be no regular classes on Washington's birthday, February 22nd, but the day will be observed by appropriate exercises.

REQUIREMENTS FOR GRADUATION.

First—The completion of the prescribed course of study with an honorable standing in deportment.

Second—An essay of not less than one thousand words upon a topic connected with agriculture or home economics.

Third—For young men, a practical experience in field work at the University farm or elsewhere, as shall appear in reports received from responsible sources.

FEES.

With the exception of an entrance fee of \$5 to residents, and \$10 to non residents, the school makes no charge.

EXPENSES.

The necessary expenses for the year do not exceed \$85. This amount does not include the cost of the required military suit for the young men, traveling and personal expense.

The cost to the student for board, heat, light and laundry is the actual cost of maintaining the table (including management), and caring for the buildings. This has not exceeded \$3 per week. Each month's board is paid in advance. The buildings are all lighted by electric lights and warmed by steam. The sleeping rooms are each furnished with a bedstead, mattress, dressing bureau, chair and table.

No deductions in charges are made for absence of less than four days. If students are compelled to be absent for that length of time they are allowed half rates if they make arrangements before leaving.

Text books are furnished at a rental of \$2 per year to students who do not desire to purchase.

Each student is required to pay for breakage of apparatus used in practical work.

A competent nurse is kept on the ground to care for the sick. To meet this expense each student pays one dollar per term.

For the purpose of supplying, calcimining and painting the sleeping rooms, a reserve fund is created by assessing each one occupying them \$2.00.

A deposit of \$5 is required of each student, as a guaranty for the return of all books and other articles borrowed.

On entering school the student makes a payment of \$12 board; \$5 deposit; \$2 book rent and reading room; \$1 maintaining nurse; \$5 entrance fee; \$2 reserve fund; total, \$27.00.

All male students are required to provide themselves with the prescribed uniform, which consists of navy blue blouse, trousers and cap,

and is as neat and economical a dress as the student can obtain. The suit complete, to measure, is furnished under special contract for \$12.25.

Each student provides four sheets, one pair of blankets, one quilt, one bed spread, one pillow, three pillow cases, towels, napkins, comb and brushes.

An assignment of rooms will be made at 9 a. m., March 21st, which will hold good until 8 p. m., the first day of the following school year. Students wishing to retain their rooms, after vacation, must be on hand when the second term opens, or pay one-half the price of board and room for the time they are late. Students arriving after the dormitories are filled are compelled to find rooms elsewhere, but are allowed a rebate of \$3 per month.

STUDENTS' DEBATING SOCIETIES.

Societies for the purpose of improvement in elocution and debate, and for obtaining instruction in the form of lectures, give excellent opportunities for entertainment and culture.

Each student should associate himself with one of these societies as early in his course as possible.

LECTURE COURSE.

During the school year, a lecture and entertainment course, consisting of six lectures and concerts, is given in the chapel at a cost of seventy-five cents for the series. These entertainments are strictly high grade, and furnish a pleasant relaxation from school work, as well as mental stimulus.

The following program, which was provided during the past year, shows the general character of the entertainments:

Tuesday, October 9 Chicago Glee Club
Tuesday, November 13—"Pluck, Patience and Perseverance"

Dr. Jas. B. Watson

Tuesday, December 18 Dixie Jubilee Singers
Wednesday, January 16 Chas. D. Kellogg, the "Bird Man"
Wednesday, February 13—"Tallow Dips" Robert Parker Miles
Wednesday, March 6—"The University of Hard Knocks" ..Ralph Parlette

STUDENTS' CHRISTIAN ASSOCIATIONS.

The Young Men's and the Young Women's Christian Associations have for their objects, social fellowship and moral and spiritual development. To this end two receptions are held each year, and Bible classes are held Sunday mornings at 8:30. A general religious service is held each Sunday at 3 p. m., and a mid-week prayer meeting each Wednesday, at 6:30 p. m. The associations are non-sectarian, so that all students may find in them an opportunity for Christian activity and mutual helpfulness.

Course of Study

FIRST (C) YEAR

FIRST TERM

Agricultural botany [5]

*Drawing [2]

Music [2]

Farm Mathematics [5]

*Blacksmithing [2]

*Carpentry [2]

Military Drill [2]

Agriculture [3]

Gymnasium [2]

*Practicums [2]

} or {

*Cooking [2]

Physical training [2]

*Sewing [3]

Social culture [1]

Field agriculture [3]

SECOND TERM

Agricultural botany [5]

English [5]

Music or literary society work [2]

Comparative physiology [5]

Study of breeds [5]

*Carpentry [2]

*Drawing (farm buildings) [2]

*Blacksmithing [2]

Military drill [2]

Gymnasium [2]

*Practicums [2]

} or {

*Laundering [2]

*Drawing (farm houses) [2]

Physical training [2]

SECOND (B) YEAR

FIRST TERM

English [2]

Agricultural physics [5]

Dairy chemistry [2]

*Dairy husbandry [2½] { Dairy lectures
Dairy practice
Dairy breeds

Fruit growing [3]

Music [2]

*Farm accounts [2½]

*Stock judging [1]

Breeding [2]

Military drill [2]

Gymnasium [1]

} or {

*Cooking [2]

Household art [1]

Physical training [2]

*Sewing [2]

SECOND TERM

English [2]

Agricultural chemistry [5]

*Dairy husbandry [2½] { Dairy stock lectures
Dairy practice
Dairy feeding

Music [2]

Agricultural physics [5]

Vegetable gardening [3]

Field crops [5]

Military drill [2]

Gymnasium [1]

} or {

*Cooking [2]

Home management [1]

Physical training [2]

*Sewing [2]

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COURSE OF STUDY—Continued

THIRD (A) YEAR

FIRST TERM

Agricultural chemistry [7]
Forestry [3]
Entomology and zoology [5]
Poultry [3]
Algebra [5] Optional

Handling grain & machinery [1]	}	or	}	*Cooking [2]
*Veterinary science [2½]				*Sewing [2]
Gymnasium [1]				Music [2]
Music or military drill [2]				

SECOND TERM

Civics or geometry [4]
Plant propagation [3]
Algebra [5] Optional

Dressing and curing meats [1]	}	or	}	Meats [1]
*Stock judging [1]				Home economy [1]
Feeding [3]				*Cooking [3]
Soils and fertilizers [5]				Domestic chemistry [3]
*Veterinary science [2½]				*Sewing [3]
				Domestic Hygiene [1]

*Figures in brackets indicate the unnumber of periods per week in which the subject is pursued. All work in subjects marked thus * extends through double time in the daily program.

ASSEMBLY.

On each school day at 11:40 a. m. the students assemble in the chapel. After the opening exercises brief talks are given by the principal, members of the faculty, or invited guests.

During the year the list of speakers includes prominent state and national officials, business men, particularly those connected with the agricultural industries, professional men, prominent clergymen of all denominations, educators from other institutions, and successful farmers. It has been found that this plan gives to the students an opportunity to hear men of prominence discuss a wide range of topics, many of which relate to rural and agricultural problems.

Members of the graduating class at times present essays, and discuss topics as assigned.

Courses of Instruction

AGRICULTURAL BOTANY.

This subject is taught with special reference to its bearing upon the every day problems that present themselves to the farmer and gardener. It is profusely illustrated with plants and flowers from the greenhouses and nursery. Some instruction is given in the use of the compound microscope. Students are thus enabled to study intelligently, in an elementary way, the tissues of plants. By this means they get a clear idea of the general principles of plant structure and vegetable physiology.

AGRICULTURAL CHEMISTRY.

In agricultural chemistry one term is given to the study of the elements and compounds which are of most importance in agriculture. This work is planned to prepare the student for intelligent study of the subject of the chemistry of foods, soils and fertilizers, and at the same time to familiarize him with the more important chemical changes which take place in every-day life. Laboratory practice forms a prominent feature of the work in agricultural chemistry. In the chemistry of foods, the composition of plant and animal bodies, the chemistry of the plant and of its food and growth, the chemistry of animal nutrition, digestibility and value of foods, and the laws governing the economic uses of foods, are some of the subjects considered. The composition and the utilization of farm crops for food purposes, and the application of the principles of chemistry to plant and animal life, form the basis of this work.

AGRICULTURAL PHYSICS.

In this department it is the aim to enlist the student's interest in a more keen appreciation of the principles that underlie the practices of his vocation. To this end the facts with which he is already somewhat familiar are used to reach the fundamental law. For example, from his knowledge of the relation of weight to bulk in grains, soil and water, he is led to a knowledge of volume, mass, density, weight, force, draft, specific gravity, and fluid pressure. In the laboratory he makes definite determinations along these lines. Likewise the somewhat vague and indefinite notions the young people have from their use of pulleys, eveners and other farm machinery, form fitting stepping stones to definite mathematical results readily reached by them under proper guidance.

The varied questions of soil physics, soil formation, the movements of water and air thru soil, soil temperatures, soil grains and granules, and pore space, are matters studied from the practical side and used as avenues to far reaching laws.

AGRICULTURE.

It is purposed in teaching this subject to cover the elementary principles governing soils, field and farm management. The work covers the origin, formation, and cultivation of soils; the movement and control of soil moisture; selecting and planning farms; subdividing fields; drainage; irrigation; roads; fences; buildings; water supply; groves and wind breaks; farm life; the relations of science to agriculture; a general consideration of farming as a business; and methods of farming.

ALGEBRA.

Algebra is optional during the third year. This work covers Wells' New Higher Algebra through simple equations. Special attention is given to literal notation, negative numbers, the equation and factoring.

BLACKSMITHING.

The students are instructed in the management of the forge and fire, and in bending, shaping and welding iron and steel. They are required to make links, rings, hooks, bolts, clevises, whiffletree-irons, tongs, cold-chisels, punches, in short, to become familiar with all the operations necessary to enable them to do their own repair work when they return to the farm. Particular attention is given to rapid and accurate welding and to the shaping and tempering of steel tools. The forges used are such as any farmer can make for himself, and each student is taught to make his own tools, so that he will be able to furnish his shop with very little outlay.

BREEDING.

Students receive instruction in the principles that govern breeding; on the influences that affect heredity and in the care and management of breeding stock. Pedigree receives careful consideration, and each student is required to make out pedigrees of two or more pure bred animals. They are also required to become familiar with methods of keeping live stock records of all kinds.

CARPENTRY.

Instruction is given by means of lectures on the care and use of the common carpenter tools, such as should be found on every farm; also on methods of farm building construction, framing, laying out rafters, stairways, estimating building material, painting, etc. In the carpenter shop students are required to make such exercises as will give them some practice in using carpenter tools. They are required to make mortise joints, splices, drawing boards, hammer handles, eveners, cupboards, etc.

Each student is required to file his own saws, sharpen his planes, chisels, etc., and to lay out rafters for buildings.

CIVICS.

During the last term of the course students receive instruction in this science, and graduate with a good understanding of the origin, necessity, nature and various forms of government, and the machinery employed to carry on public works, establish justice and provide for the common defense; of the organization and management of local institutions—the town, the village, the city and the county; the manner in which states are created and the affairs administered; the three departments—legislative, judicial and executive—and the functions of each; the interdependence of the state and its citizens, as well as the powers and obligations of each, by due attention to which the state may be strengthened and the condition of its citizens ameliorated.

The relations of the state to the general government, the constitution and the power it confers, and the provisions for amendments, are taught. The more important principles of commercial law, including contracts, agency, partnership, corporations and commercial paper, receive attention. Instruction is also given in the United States method of surveying public lands.

COMPARATIVE PHYSIOLOGY.

During the first year students take one term of applied physiology. This is an effort to connect technical physiology with the necessities of every day life. The work includes a study of the general plan and structure of the body and the various individual tissues of which it is composed; also sources of heat and energy, digestion and the relation of food materials to the various tissues of the body. Considerable attention is given to diseased and innutritious foods, food adulterations and narcotics. The circulation is studied with special reference to the relation of the blood and lymph to tissue nutrition and tissue waste.

Accidents, including poisoning, are studied for the purpose of giving a practical knowledge of what to do in emergencies. Considerable attention is given to the subject of clothing, the various materials in use being considered with reference to fitness for special purposes. Some time is also given to the study of common physiology, of the organs of circulation, digestion, respiration, nervous system, and the relations of bacteria to the common diseases, especially such diseases as consumption, typhoid fever, etc. A brief study is also given to the subject of digestion in the lower animals.

The class work is illustrated by means of large charts, skeletons, manikins, and dissections. Important points of difference between human and animal

physiology are pointed out in preparation for the third year's work in the veterinary class. Matters of home and personal hygiene are interwoven with the physiology work.

COOKING.

Cooking extends through five terms of the curriculum. The subjects covered in each term are as stated below:

First term, C year: Furniture and equipment needed in a home kitchen; best methods of managing kitchen work, caring for kitchen and dining room utensils, furniture, etc.; the place of measuring and weighing in cookery; the preparation and serving of vegetables, cereals and bread.

First term, B year: Cooking is again taken up, the special topics being preservation of fruits and vegetables by canning, preserving, pickling and jelly making. The selection, preparation and serving of meats of all kinds is also considered. A sufficient amount of practical work is given in each case to illustrate the principles brought out. A special study of table service is begun during this term and extends through the year, a practice dinner being given by a portion of the class in the class dining room each month.

Second term, B year: Eggs are considered as to selection, preservation, food value, different ways of cooking and serving. The preparation and serving of soups and beverages is considered together with their food value. The subject of salads is considered in a similar way.

First term, A year: This is devoted to the marketing and care of food. The preparation and serving of dairy foods and made-over dishes and dishes for invalids receive special attention.

Second term, A year: This is devoted to the preparation and serving of desserts and to the study of food rations, dietaries, bills of fare, confections, etc. A free use is made of the U. S. Bulletins during the year in the hope of arousing a greater interest in the food question.

DAIRY CHEMISTRY.

The chemical and allied changes which take place in the handling of milk and its manufacture into butter and cheese, and the application of these principles to the production of milk and its products form the basis of this work.

DAIRY HUSBANDRY.

Farm dairy lectures.—A course of lectures is given in farm dairying, giving instruction in the care of milk and utensils, explaining the principles involved in creaming milk by the gravity and centrifugal processes and giving full instruction in regard to running farm separators and the manufacture of butter and cheese in the farm dairy.

Dairy practice.—Students receive instruction in the most advanced methods of creaming milk, ripening cream, churning, working and packing butter, the manufacture of sweet curd cheese, and measuring the value of milk by the Babcock test and lactometer. This practice work begins the third week of the first term and continues through the school year.

Dairy stock.—During the last half of the first term students receive instruction in regard to the characteristics of the various breeds of dairy cattle, their origin and comparative adaptability for the dairy. Lectures are given upon the points desirable in animals intended for the dairy. The students have practice work in judging dairy stock.

Feeding.—During the second term lectures are given covering both the scientific and practical phases underlying the principles of feeding. Practice work is given in compounding rations and estimating the comparative value of food stuffs.

DOMESTIC CHEMISTRY.

The combination of human foods to form balanced rations, dietary studies of families, cost and value of foods, losses in the cooking and preparation of foods, cereal food products, animal food products, adulterations of foods and their detection, fuels, soaps, dye stuffs and colors, composition of common household utensils, the household water supply, preparation of home-made baking powders, bakers' chemicals, the composition, food value and characteristics of tea, coffee, chocolate, cocoa, molasses, honey, vinegar and spices, the grading and testing of wheat flour and the chemistry of bread making, form the essential parts of this work.

DOMESTIC HYGIENE.

Several lectures by a physician will be given upon maidenhood, maternity and infancy. These special lectures will be supplemented by the regular lectures which consider the health of the family as dependent upon pure food, pure water, personal cleanliness and proper habits as well as upon heredity. The aim is to impress the truth that a knowledge of and obedience to the laws of hygiene are essential to the preservation as well as the restoration of health.

DRAWING.

The student is taught the practical value of drawing for the purpose of designing and arranging buildings, machinery, etc. He makes drawings of the shop exercises, then works from his own drawings, thereby learning the application.

Designs are made for dwellings, barns, outbuildings, and machinery. As practical subjects for their designs, students are requested to bring from home data for plans of buildings needed on their farms. Estimates are made of the amount of material required and cost of construction.

DRESSING AND CURING MEATS.

The instruction given the boys consists of demonstration lectures on the preparation of meat for farm use. They are required in addition to take two weeks' practice in dressing, cutting and curing such meat as is likely to be used on the farm. Work is also given them in selecting and judging fat stock, and in judging dressed meats.

ENGLISH.

(C) Applicants for admission to the "C" class in English should be familiar with the inflections of nouns, pronouns and verbs, the definitions and classifications of phrases and clauses, and the common case constructions. The first year's work consists of the study of chapters I, II, V., VII. and IX. with appendix III. in Maxwell and Smith's Writing in English, with almost daily practice in writing the simpler forms of composition. Two periods a week are given to the study of one of the classics.

(B) During the second year the study of Maxwell and Smith's Writing in English is completed. Once a week a short essay is prepared and submitted for criticism.

(A) At the option of the English Department a series of literary programs will be presented in chapel by the members of the graduating class. The numbers include abstracts of leading magazine articles, biographical sketches, book reviews and selections from fiction. Special prominence is given to authors depicting American life.

ENTOMOLOGY AND ZOOLOGY.

The class in entomology receives instruction of a practical nature. The course is divided as follows:

Classification of insects; habits and life histories of injurious forms with special attention to insect pests found in Minnesota. The nature of different insecticides and methods of application are discussed. The student spends some time in becoming acquainted with the appearance and habits of beneficial insects. Each student must collect fifty insects representing at least twenty-five different kinds.

The four-footed pests of the farm—rabbits, gophers, squirrels, etc., as well as injurious and beneficial birds, are also studied.

FARM ACCOUNTS.

The work in accounts is applied to the transactions which the student meets in the various duties on the farm. He is taught to keep his accounts, that he may know at any time the profit or loss of any department of his business, and is thus enabled to plan intelligently.

FARM ARITHMETIC.

Instruction in this subject consists of the application of its principles to all kinds of farm problems where measurements of material, extension, capacity, etc., are required. The student is prepared also to handle with ease the mathematics of the technical courses in the school.

FEEDING.

The principles of feeding as applied to the production of horses, beef cattle, sheep and swine are taught. Special attention is given to the choice and preparation of food for animals during different periods of growth and during the time they are used for breeding purposes and to summer feeding and pasturage. Practice is given in compounding rations that will include in the best manner the food stuffs commonly produced on the farm. Practical lessons in feeding are given at the barns under the supervision of an experienced feeder. Each student thus learns the requirements of each class of stock.

FIELD AGRICULTURE.

This work consists of a study of those portions of geology relating to soil formation; effect of the glaciers on the soils of Minnesota; origin of soils in the various agricultural regions of Minnesota; classification of soils; soil moisture and soil tillage; land areas and the planning of fields and farms; the classes of field crops as grain, grass, and cultivated crops; the relation of these crops to each other in a systematic rotation and in their relation to soil fertility; the origin, distribution, and uses of cereal crops and other field crops.

FIELD CROPS.

Students are admitted to this subject after having finished the work of agriculture and receive instruction as follows:

Crop rotations, farm management, and planning farms under various conditions; production and care of farm manures and green manure crops; fertility as related to weeds, crop production and profits; preparation of land; planting, cultivating, harvesting, storing, and marketing of grains, roots, fiber, sugar, grass and other forage crops; meadows and pastures; treatment of field crop diseases; selecting, breeding and judging seed.

FORESTRY.

Includes the consideration of the formation and care of wind breaks and shelter belts; the laying out and planting of home grounds; discussion of the hardiness, habits and value of our native and introduced trees; and the methods of propagating them.

FRUIT GROWING.

Fruit growing is taught with reference to raising fruit for market and in the home garden.

GEOMETRY.

Geometry is offered in the second term of the third year as an elective in place of civics to those who wish to prepare for a college course. This work covers the first two books of Wells' Essentials of Plane Geometry.

GYMNASIUM WORK.

The gymnasium is a large, well lighted, two story brick building. It is well supplied with heavy apparatus for general gymnastic and athletic exercises, together with such appliances as are necessary for the development of a symmetrical body. Besides being fitted up with the finest apparatus, it possesses space and equipment for sprinting, pole vaulting, hurdling, high and broad jumping, shot putting, etc.

Class work in physical training is required of all undergraduate young men not excused on account of physical disability. Courses are offered on the heavy apparatus, in corrective work, class drills and athletic training. In addition to the regular class drill, a certain part of which consists of training in athletic sports, the school is represented by a strong basket ball team, a track athletic team, hand ball team, and an indoor tennis team.

HANDLING GRAINS AND MACHINERY.

Practical suggestions for the best methods of harvesting, shocking, stacking and storing of cereal grains; adaptation of the various kinds of machinery with reference to the soil, weeds and seasons are given; adjustment with special reference to durability, convenience in manipulation, etc.

HOME ECONOMY.

The lectures are a study not only of the just proportion between expenditure and income, but of definite proportion in the expenditures made for existence, comfort, culture and philanthropy. A study is made of the sources of income, especially of the income from the farm in the form of house, food and luxuries; the purchase of clothing, household stores and furnishings is considered from the standpoint of the suitable. The relation of cash and credit to cost is also considered. Attention is given to savings and forms of investment, a bank account and the use of a check book. Students are required to submit an account setting forth in detail the use of a certain named income expended in the support of a family for one year, embracing not only every item of necessary home expense, but also an outlay made for travel, luxuries, accident, sickness, or other emergencies. The habit of keeping a household account is calculated to strengthen the judgment in the wise use of money.

HOME MANAGEMENT.

The subject includes both housekeeping and home-making, and the instruction is based on the belief that housekeeping is a business as important as it is difficult, and that home-making is the noblest form of human endeavor. The care of the house and household belongings, of the food and the clothing, as well as the ordering of family life, are considered in their relation to an adequate plan for home management. To start the student in the right way of becoming mistress of the business of housekeeping and home-making is the end sought. The practical benefit to be derived from the knowledge students gain in the cookery, sewing, dairy, laundry and other classes, is emphasized and shown in its relation to an adequate plan for the daily program for the home.

HOUSEHOLD ART.

Lectures are given upon house and grounds, noting the distinctive character of the country home; the sanitary conditions involved in the selection of the site of the house; also the influence of the outlook; an elementary study of architecture in connection with planning a house which will provide "a place for everything" required in housekeeping operations and family life; instruction in the fundamental value of color, form and design; training the taste and emphasizing the laws of hygiene that should influence the selection of materials and styles in the finishings and furnishings of the house.

LAUNDERING.

Second term, C. year: The aim is to give the students a knowledge of the best means of cleansing all fabrics with little injury to the cloth or color. Approved methods of cleansing by the use of chemicals, as removing grease spots, stains, etc., are given.

LIBRARY.

The agricultural library now contains ten thousand books and about seven thousand pamphlets, including reports and bulletins. Aside from the large number of pamphlets and other publications of the different agricultural institutions and societies, a large number of the most important technical and agricultural magazines are kept on file, bringing together all the agricultural literature of any importance.

LITERARY SOCIETY WORK.

Any student belonging to a recognized literary society of the school may receive credit in the course of study for the work done therein by registering at the beginning of the term, and submitting to the teacher in English all essays to be read by such student before the literary society and rehearsing to said instructor all essays, readings, or recitations with a view to correct pronunciation, expression, etc.

MEATS.

The instruction given to the girls in the subject of meats pertains to the selection and value of different classes of meat, and to the best methods of curing and preserving.

MILITARY DRILL.

Under the provisions of the Act of Congress of 1862, establishing the "Land Grant Colleges" of the United States, instruction in Military Science and Tactics is required to be given at all colleges which are its beneficiaries. For this purpose the United States Government furnishes the Department of Agriculture with the necessary arms and equipments, and details an officer of the regular army to take charge of military science and tactics.

All male students of classes B. and C. not physically unfit are required to attend military drill. For the A. Class drill is an elective.

Military instruction is intended to be so conducted as to develop a soldier-like bearing and foster a spirit of gentlemanly courtesy, soldierly honor and obedience to lawful authority, as well as to familiarize students with battalion manoeuvres, guards and the theoretical and practical use of firearms.

The officers and non-commissioned officers are required to be good students in the other departments, soldier-like in the performance of their duties, exemplary in their general deportment and able to pass a creditable examination in drill regulations.

In general, the officers are selected from the "A" class; sergeants and corporals from the "B" class.

MUSIC.

A systematic training in music is given and all students are required to take the work unless they already have a credit in it.

Class quartets and octets are organized and trained for aiding in public entertainments in the school.

The Senior Class gives a concert at Commencement time.

PHYSICAL TRAINING.

The work done in this department aims at symmetry, co-ordination and control rather than mere physical strength. It is planned to improve the functional activity of the body and to counteract and correct tendencies toward incorrect development, especially those resulting from the artificial life of civilization. The work of the beginning class is free hand, based upon Swedish principles, and directed especially to deep breathing, correct carriage and posture. The work of the advanced class includes light apparatus and aesthetic movements for grace and suppleness in action. Vigorous games are given to both classes.

PLANT PROPAGATION.

In this subject the principles underlying the development of cultivated varieties of plants and seed testing are taught; also the propagation of plants by seed, cuttings, grafting and budding. The work of the class room is illustrated by the orchards, nurseries, forest plantations, gardens and greenhouses on the grounds of the experiment station, and by visits to commercial nurseries and greenhouses near by.

POULTRY.

The instruction in this subject will include the following topics: History and characteristics in the leading breeds of poultry; breeding, rearing and management of fowls for eggs and for the market; planning, building and arrangement of poultry houses; managing incubators and brooders. A model poultry house, containing pens of the most improved breeds, incubator cellar, work-room, etc., has been provided, where experimental work and practical instruction are carried on.

PRACTICUMS.

During the first year the young men spend four hours each week in a series of lessons and exercises in the barns and fields, taking up such practical lines of work as land surveying, laying tile drains, building fence, setting up farm machinery, soldering, pipe-fitting, splicing rope, making rope halters, etc.

SEWING.

Instruction is given in the principles and use of healthful and appropriate clothing and in the needlework of the home. The course provides for five

terms' work. During the first term instruction is given in the elements of sewing, including different stitches, seams, hems and the various kinds of mending; also practical talks on the use and care of the sewing basket, touching the history of the various implements used, and upon the textiles used—cotton, wool, linen and silk.

In the second year instruction is given in cutting and making plain garments, drafting underwear, shirt waists and cotton dresses—taught by a simple method in which only a tape line and square are used.

In the third year the more difficult work of dressmaking is taken up, pattern drafting, cutting and fitting dresses. A practical aid to the work in this subject is offered by a museum of exhibits. These exhibits are kept in the class rooms and include primitive and modern sewing implements, weaving processes and the various cloth fibers.

Lectures are given on the utilitarian and art values of various textiles, and in connection with the selection of materials practical lessons in shopping are given. Attention is paid to harmony in color.

SOCIAL CULTURE.

A course of lectures is given on the usages of society, including manners, behavior, the voice, conversation, forms of address, invitations, etc. Suggestions are made in reference to reading, literary taste and the choice of books. Special stress is given to the thought that the family life ought to be the highest expression of good society, and that next to the power of thinking correctly is the power of approaching others with ease and speaking with tactful directness.

SOILS AND FERTILIZERS.

Some of the topics studied are: The formation of soils, adaptability of crops to different kinds of soils, chemical composition of soils, physical analysis of soils, interpretation of soil analysis, the judging, rating and scaling of soils, alkali soils, acid soils, humus and other relations to soil fertility, the factors governing the increase and decrease of the nitrogen of the soil, farm manures—their composition and uses, and their action upon soils—green manures, commercial fertilizers, special purpose fertilizers and their use; the influence of different methods of cultivation upon the fertility of the soil, the food requirements of farm crops, the rotation of crops as affecting the fertility of the soil, the income and outgo of fertility from farms where different systems of farming are followed, the general principles of soil exhaustion and soil improvement and the various factors which affect the fertility of soils. The class room work is supplemented by laboratory practice.

STOCK JUDGING.

Score cards are used to an extent sufficient to familiarize students with that method of judging, and special efforts are made to do systematic and closely critical work in the selection of animals representative of the breeds and for breeding purposes. Living specimens are used and rings made up for the student contests in stock judging. In connection with the work in dressing and curing meats, the judgment passed on live animals for the block is verified by score cards, judgment of the dressed carcasses and by actual block tests. These tests are made by the students and bring out the percentage of meat in each commercial cut of the carcass. The quality of meat is passed upon in this connection by experts, and a careful report made to ascertain the type of animals best calculated for the production of the most meat of the best quality.

STUDY OF BREEDS.

The market classes of horses, cattle, sheep, and swine are taken up briefly to bring out the form, quality, and condition desirable and common to the different classes. This is followed in each class of stock with the most common and valuable breeds for the state. These are studied carefully as regards their characteristics and origination, and as to their adaptability to the different Minnesota conditions. This work is illustrated with stock from herds and flocks maintained at University Farm for this purpose.

VEGETABLE GARDENING.

Vegetable gardening embraces the study of garden tillage, irrigation, and rotation of crops; transplanting; formation and care of hotbeds; study of garden insects; and the growth of various vegetable crops.

VETERINARY SCIENCE.

During the A year the student takes up a course of study in veterinary medicine, the purpose of which is to fit him for intelligent care of his farm stock. In this course the teaching is done by means of lectures and reviews and clinical work at the hospital maintained for this purpose. Lectures are illustrated by means of stereopticon charts, manikin of horse, skeleton of horse, and various other appliances.

The work covers the following subjects: Elementary anatomy; elementary pathology; cause and prevention of diseases, diagnosis and treatment of common diseases; examination for soundness; and a final short course on common medicines; studying their effects, uses and doses. At the hospital clinics students are enabled to examine and care for a variety of cases and to learn the elements of diagnosis for the more common diseases and forms of lameness.

STUDENTS' TRUST FUND.

The class of 1902 left with the school a fund of \$100 "to assist by temporary loans at a reasonable rate of interest, deserving students needing such help, who are not below the B class in the school of agriculture." This fund is in charge of a committee consisting of the secretary, the principal, the preceptress, and the president of the A class.

THE LUDDEN TRUST.

The Honorable John D. Ludden, of St. Paul, gave the University of Minnesota \$5,000 to be held, invested and re-invested by the University, through its Board of Regents, and the income thereof to be collected, received and applied by said Board of Regents to the financial assistance of students of either sex in the school of agriculture. Mr. Ludden delivered into the hands of the regents for the principal sum one Northern Pacific registered prior lien railway land grant gold bond of the denomination of \$5,000, payable to the University of Minnesota and its assigns in gold coin, on the first day of January 1997, with interest at 4 per cent per annum, payable quarter-yearly in like gold coin, the fund to remain so invested until the bond matures, unless by reason of changed conditions a re-investment shall be sooner deemed judicious by the Board of Regents for the safety, conservation or continued productiveness of the fund. The premium on the purchase of this first grade security was \$212.50, and was paid by Mr. Ludden, thus enlarging his donation by that amount.

Mr. Ludden imposes the following conditions: "The beneficiaries must be youths who are residents of the state of Minnesota; they must be and continue of unblemished moral character, and of temperate and industrious habits, and they must be such as by examination and trial shall evince and maintain a taste, habit and aptitude for study and improvement; and any student who shall fail to come, or shall cease to be, within the above conditions shall forfeit all claims to the benefit of such fund. Subject to these conditions the administration of such income is entrusted to the said board of regents, which may make such rules therefor as they may deem judicious."

This fund produces \$200 a year. Those wishing to avail themselves of its benefits should apply to the executive committee of the Board of Regents of the University of Minnesota.

Mr. Ludden has since donated another \$5,000 for a like purpose so that the yearly income is now \$400.

Intermediate Year

For Graduates of the School of Agriculture who wish to enter the College of Agriculture.

The course of study in the School of Agriculture extends over three years, and the school year is six months long. This does not give sufficient time for preparation for college work, and it has been found necessary to supplement the course offered in the School of Agriculture by an additional year's work in general academic branches. The subjects offered in the intermediate year can be taken elsewhere in any accredited high school before entering the School of Agriculture. This intermediate year enables graduates of the School of Agriculture to enter the College of Agriculture on the same basis of preparation as students enter other departments of the University. English and mathematics are given prominence in the intermediate year.

The following prescribed course, or its equivalent taken in some other school, is required of graduates of the School of Agriculture, who desire to gain admission to the College of Agriculture:

FIRST TERM.

Elementary algebra [5]
Plane geometry [5]
English [5]
General History [4]

SECOND TERM.

Higher algebra [5]
Solid geometry [5]
English [5]
Economics [4]

The courses in mathematics for the intermediate year cover Wells' New Higher Algebra from simultaneous equations to logarithms; Downey's Higher Algebra, Part I. and Wells' Essentials of Plane Geometry, beginning with Book III. The work preliminary to these courses is done by the student in the A year in the School of Agriculture.

Students who have completed higher algebra and plane geometry in the A year of the School of Agriculture, are admitted to the freshman class in the College of Agriculture conditioned in solid geometry and English; these conditions must be removed during the freshman year.

The course in English extends through both terms. Two periods a week are devoted to composition, with Scott & Denny's Composition-Rhetoric as a text-book, and three to the study of literature, which will also be made the basis of considerable written work. The characteristic works of the following authors will be studied: Shakespeare, Bacon, Milton, Addison, Gray, Goldsmith, Burns, Wordsworth, Lamb, Macaulay, Ruskin, Browning and Tennyson. Individual members will be assigned readings from various other authors.

Short Course for Farmers

FACULTY

CYRUS NORTHROP, LL.D., *President.*
WILLIAM M. LIGGETT, *Dean.*
SAMUEL B. GREEN, B.S., *Horticulture, Forestry.*
J. A. VYE, *Business Methods.*
HARRY SNYDER, B.S., *Agricultural Chemistry, Soils.*
T. L. HAECKER, *Dairy Husbandry.*
M. H. REYNOLDS, M.D., V.M., *Veterinary Science.*
J. M. DREW, *Poultry, Workshop Hints.*
A. BOSS, *Live Stock, Dressing and Curing Meats.*
WM. BOSS, *Farm Mechanics.*
F. L. WASHBURN, M.A., *Insect Enemies.*
COATES P. BULL, B.Agr., *Farm Implements, Grains.*
W. L. OSWALD, *Farm Botany.*
D. D. MAYNE, *Parliamentary Practice.*
A. L. EWING, M.S., *Farm Physics.*
JUNIATA L. SHEPPERD, *Domestic Science.*
MARGARET BLAIR, *Domestic Art.*

This is a course of instruction provided by the faculty of the School and College of Agriculture for the benefit of farmers who are unable to attend the regular school course.

The next term will open Jan. 10th, 1908. The first two weeks will be devoted to the judging of grains, soils and live stock, and for convenience will be known as the judging course. This will be followed by four weeks known as the lecture course during which time lectures will be given covering the more important branches of agriculture, horticulture, live stock breeding, farm botany, farm chemistry, entomology, poultry, dairying, etc., as outlined below.

During the judging course the time will be divided as follows: The judging of grains and soils will occupy the first four days, then will follow two days for the judging of sheep, two for swine, two for cattle, and two for horses.

Work will begin at 8:15 o'clock a. m., and close at 3:40 p.m. During the four weeks of the lecture course there will be no work on Monday, but this day will be spent in visiting places of interest such as the stock yards, stock farms, flour and flax mills, etc.

For the entire course a fee of \$10.00 will be charged. For the judging course or any part thereof the fee will be \$3.00.

A special circular of information concerning the Farmers' Short Course may be obtained on application to D. D. Mayne, Principal School of Agriculture, St. Anthony Park, St. Paul, Minn.

The course of lectures and study is outlined as follows:

Agriculture: Judging the qualities of soils, the selection of farms, planning farms; developing the fields, drainage, roads, fences; developing the farmstead and its buildings; managing fields and growing, cultivating, harvesting and preserving forage and grain crops; the rotation of grain, cultivated and grass crops; the use of live stock; and general farm management.

Dairy stock judging: The instruction given in judging dairy stock will be based upon the actual performance of animals bred and reared in the dairy division, the records covering a period of five years and giving the annual yield of milk and butter fat, cost of production and profits.

Dairy husbandry: The lectures in dairy husbandry will cover the characteristics of the various breeds of dairy cattle, their comparative adaptability for the various phases of dairying and the style or type of cow that has demonstrated her ability as a large and economical producer. The scientific and practical phases of feeding for milk production will be explained and practical instruction and training given in calculating rations for milk production.

Animal husbandry: During the four weeks of lecture work a series of lectures will be given on animal breeding. These lectures will include the known laws of breeding, such as heredity, variation and atavism. Attention will be given to such features as the selection of prepotent sires and dams, to cross breeding, in-breeding, and other matters of interest to the breeder of live stock. Pedigrees will be discussed and the students made familiar with the registration and transfer of pure bred stock. The feeding and management of horses, beef cattle, sheep and swine will also be discussed. Foods suitable to each class of animals, and methods of preparing and feeding them will be among the subjects receiving attention, together with directions for the practical management of stock while in the stable and pasture.

Agricultural chemistry: Soils and foods are made prominent features of the work in agricultural chemistry. Lectures are given on the conservation of the fertility of the soil, the composition and use of farm manures, the draft of different farm crops upon the soil and the methods of making the fertility of the soil available by the rotation of crops and by other means so as to secure the necessary changes in the soil to produce the highest degree of fertility. Lectures are also given on the composition and uses of human and animal foods. The judging of soils will be made a feature of this work.

Farm mechanics: The instruction given in this subject will consist of lectures on farm mechanics, taking up such subjects as pumps, farm water systems, windmills, the general principles of steam and gasoline engines, placing shafting, pulleys and belts, pipe fitting, soldering, etc. Some instruction will also be given in sharpening and using hand tools, such as saws, planes, chisels, and other tools necessary in farm practice.

Farm implements: The lectures on farm implements will be illustrated, as far as possible, by samples. Stereopticon views will be made use of in illustrating machines that cannot well be taken to the class room. It is the aim in these lectures to bring out the lines covering the draft of implements and the objects attained by their use. Suggestions will be made on selection of implements adapted to various kinds of work. The care of implements when not in use will also be discussed, and an attempt made to give as fully as possible all information that will be beneficial in the care and handling of farm machinery.

Dressing and curing meats: The work in dressing and curing meats will be given in a course of demonstration lectures. In demonstrating these lectures

the animals will be dressed before the class and the reason for each operation fully explained. The methods of cutting up the dressed carcass for different purposes will also be shown before the class and the use and value of each cut explained. Sausage making, lard rendering, and the "working-up" of all parts of the animals will be taught in a simple and direct way.

Farm accounts: A series of lectures will be given on business forms, business arithmetic and the keeping of simple farm accounts and records.

Farm botany: Eight lectures will be given on the phases of botany of special interest to farmers; for example, the pollination of flowers, weeds and weed seeds, poisonous plants, fungus diseases of plants and how to deal with them.

Farm horticulture: Lectures will be given on the care and management of the apple and plum in this climate, including such subjects as location of the orchard, selection of the trees, planting, cultivation, green manuring; preparation for winter; advantages and disadvantages of root grafting, budding, and top working; diseases injurious to orchards. Lectures on the care and management of small fruits will consider the subjects of selection of varieties, planting and cultivation, origin of new varieties, propagation, marketing, winter protection, also the insects and diseases injurious to raspberries, blackberries, currants, gooseberries, strawberries and grapes. Under vegetable gardening will be considered the growing of potatoes, tomatoes, celery, onions, squash and cucumbers.

Veterinary science: This work includes a series of lectures on elementary anatomy, animal foods and digestion; and causes, prevention and treatment of common diseases of farm stock. An especial effort is made to have this work practical and helpful to men who are actually handling farm stock.

Poultry: Lectures will be given on this subject with special reference to the needs of the Minnesota farmer. The following subjects will be considered: Location and construction of poultry buildings and yards; a study of the breeds best adapted to the farmer's use; the hatching, rearing and management of the farmer's flock; feeding for eggs and for fattening; killing and dressing fowls, and packing for market; marketing eggs.

Economic entomology: The entomologist will give a course of lectures on injurious and beneficial insects, and will discuss the various insecticides and methods of application. The four-footed pests of the farm—rabbits, gophers, etc., are also studied, and a few lectures are given on practical bee-keeping. If there be sufficient demand to warrant, and time permits, a few lectures will be given on birds and their relation to agriculture.

Parliamentary practice: A debating club is made up of the members of the short course class and weekly meetings are held which give opportunity for learning how to conduct public meetings and for practice in public speaking.

Physics: This course consists of six lectures with illustrative experiments. In these exercises the following topics are discussed: The principles of draft in the horse; the causes of draft in wagons, including the effect of road-bed; the effect of grades or hills, involving the principle of the inclined plane; the various questions involved in eveners, road construction and maintenance; including the question of reducing grades, the rate a horse walks in plowing, hauling, etc.; horsepower; farm drainage; weather forecasting.

Workshop hints: In addition to the above, four lecture periods will be devoted to farm workshop hints, such as splicing rope, making rope halters and rope belting, and tempering simple tools.

Dairy School

FACULTY

CYRUS NORTHROP, LL.D., *President.*

WILLIAM M. LIGGETT, *Dean.*

T. L. HAECKER, *Professor of Dairy Husbandry.*

J. A. VYE, *Creamery Records and Accounts.*

HARRY SNYDER, B.S., *Dairy Chemistry.*

M. H. REYNOLDS, M.D., V.M., *Diseases of the Dairy Cow.*

J. M. DREW, *Forage, Farm Buildings.*

WILLIAM BOSS, *Instructor in Practical Engineering.*

H. L. RUSSELL, Ph.D., *Dairy Bacteriology.*

E. K. SLATER, *Creamery Management.*

H. T. SONDERGAARD, *Chief Instructor.*

I. O. DYBEVICK, *Instructor in Creamery.*

E. L. ALLEN, *Instructor in Cultures and Starters.*

A. W. PARKIN, *Instructor in Cheesemaking.*

C. B. MOAK, *Instructor in Dairy Laboratory.*

M. P. MORTENSON, *Assistant in Cultures and Starters.*

J. C. JOSLIN, *Assistant in Creamery.*

The next session of the Dairy School will open Monday, November 18th, 1907, and continue four weeks.

This course is designed to furnish persons who are actually engaged in the manufacture of butter and cheese in creameries and cheese factories an opportunity to become more skilled in their work and also to study the many problems which have a direct bearing upon the dairy industry. Recognizing the fact that such persons cannot be away from business for a long period, the term has been so arranged that the time of each student is fully occupied by lectures and actual work in the creamery training room every hour of every working day of the term.

The rapid growth of the dairy industry in the Northwest calls for constant enlargement in equipments for dairy hall.

With each succeeding year, as dairy products manufactured in our

creameries take higher rank in quality and finish, the character of the instruction given must be of high order. To meet these requirements the training rooms are each year equipped with the best apparatus, and the corps of instructors is composed of the most skillful workmen and best instructors.

No pains will be spared to maintain the high standard which the school has attained. Each member of the faculty has special qualifications for the duties to which he has been assigned. The lecture course and practical instruction are arranged with special reference to giving the greatest amount of training and practice possible in a four weeks' session.

Instruction is divided into seven courses:

- 1st. Lectures covering the entire field of dairy husbandry.
- 2d. Practical work daily in the butter room.
- 3d. Practical work daily in the cheese room, where the manufacture of flats, cheddars, Swiss, brick, Edam and Gouda cheese is carried on.
- 4th. Practice work in the laboratory, examining milk, making daily composite tests, and the pasteurization of milk and cream.
- 5th. Practical engineering, steam fitting and plumbing.
- 6th. Practical work in factory bookkeeping.
- 7th. Practical work with cultures and starters.

I.—LECTURES.

The course of sixty lectures furnishes in a plain and concise form the most valuable information for those who are interested in any branch of agriculture, covering, as it does, the most important points in the breeding, rearing, feeding and general management of dairy stock, the economical production of milk, growing and preserving of forage and grain crops, the management of meadows and pastures, management of barns, stables and yards, construction of silos, co-operative dairying, creamery and cheese factory management, judging and marketing dairy products, the chemistry of milk, dairy bacteriology, engineering, animal hygiene and treatment of the common diseases of the dairy cow.

II.—BUTTER MAKING.

The running of separators; ripening and churning of cream; how to ripen cream to secure best flavor; how to churn, wash and salt butter so as to avoid specks and mottles; to secure good grain and best methods of preparing for market—are some of the points which receive special attention. As all creamery men should be able to judge butter from a commercial standpoint, students are trained daily in the art of scoring butter by the score card.

III.—CHEESE MAKING.

The work in the cheese room is conducted on a large scale, including the manufacture of several brands of fancy cheese. The fact that there is a demand for these at highly remunerative prices has induced the Regents to provide the necessary means for carrying on this work.

A complete record of every step taken is required of each student. Here is a good opportunity for cheese makers to meet, investigate new methods, make experiments on doubtful points, compare notes, and thus gather in a few weeks knowledge that otherwise would take years to acquire.

IV.—MILK TESTING..

It has been found that the value of milk for both butter and cheese is measured by the per cent of fat content, and nearly all our factories and creameries now base the payment for milk on the fat content. It is therefore

necessary for every factoryman to familiarize himself with the best methods of milk testing. The chemist gives a general outline of the work, but in order that each student may have thorough training in milk testing daily exercise is given. Steam turbine and hand power machines and other apparatus are provided and operated in the laboratory.

The pure and wholesome milk and cream supply for our cities is a matter of vital importance, and there is great need for improved methods of handling milk intended for this purpose. To meet this, milk and cream pasteurizing apparatus of the latest and most improved makes has been provided for the dairy school, and a few advanced students will be given instruction in this work.

V.—MOTIVE POWER.

The work in engineering consists of practical talks on the construction, care and management of creamery engines and boilers, pumps, injectors, heaters, etc., and work in the practice room.

In the practice room are provided an eight horse power, simple, slide-valve engine, three types of boiler feed pumps, two types of deep well pumps, one injector, two milk pumps and a steam gauge, which the students have the privilege of examining and operating. Instruction is also given in pipe fitting, placing shafting, babbitting bearings, soldering, etc.

It is the aim to make this work as practical as possible. Questions of interest on the subject are freely discussed.

VI.—FACTORY BOOKKEEPING.

All the essential features of factory accounting from the receipt of the milk to the returns in net proceeds are thoroughly considered. Paying for the milk according to the fat content, or otherwise, is fully explained. The students do, in books provided, the actual one month's accounting of a creamery.

VII.—STARTERS AND CULTURES.

Since all students who are admitted to the school have had some experience in the routine work of running separators and since the most important part in butter making is the art of uniformly making a product having a fine flavor and good keeping qualities, special attention is given to cultures, starters and pasteurization. Constant additions will be made to the equipment needed to make this course inviting to those who wish to fit themselves for masters of the art of creamery butter making.

REQUIREMENTS FOR ADMISSION.

Experience has shown that students who have had some practical training in the creamery or cheese factory before coming to the dairy school are, as a rule, the ones who are able to make the most of the course; it is therefore required that persons who intend to take this course shall have had at least one season's experience before coming to the school. No entrance examination is required.

EXPENSE.

A registration fee of \$15 is required of each student. Students can board in either city and reach the school by street car, or board can be secured near the school for from \$3.50 to \$4.00 per week. Each student is required to supply himself with two white suits, including caps, to be worn during working hours in the creamery and cheese rooms. The suits may be procured for about \$1 each.

DAIRY CERTIFICATES.

The Regents will grant dairy certificates to students who have taken the course and passed a satisfactory examination and in addition have demonstrated by at least one year's work in a factory that they have acquired special skill in the art of butter and cheese making, and are thoroughly qualified to take charge of a creamery or cheese factory.

To reach the school from either St. Paul or Minneapolis, take the Como-Hopkins or Como-Harriet street car and get off at Commonwealth avenue.

Address applications for admission to T. L. Haecker, St. Anthony Park, St. Paul, Minn.

CROOKSTON SCHOOL OF AGRICULTURE.

The Crookston School of Agriculture located at the northwest Experiment Farm, Crookston, Minn., was established by the legislature of 1905. It offers to the young men and young women of the Red River Valley a three-year course in practical farming and home-making. The school year for 1907-8 will open October 7, 1907 and close April 1, 1908.

THE FARM STUDENTS' REVIEW.

The Farm Students' Review is a monthly agricultural paper owned and published by the Alumni Association of the School of Agriculture. The paper is intended to be a medium by which the former students of this institution shall be kept in touch with each other and also with the School and Experiment Station. It also endeavors to bring the farmers throughout the state generally, into closer connection with the institution and to this end strives to present the latest progress in experimental work at the various Stations. It is the official organ of the Alumni Association and of the Farmers' Club.

THE FARMERS' CLUB.

The Farmers' Club of Minnesota is an organization composed of students and ex-students and members of the faculty of the School of Agriculture. Any one who has ever registered as a student in the regular, dairy or short course or who is or has been a teacher in the School of Agriculture, is eligible to membership. The objects of the Association are to foster and strengthen the ties between the School and its former students and to extend the work of the School and Experiment Station among the farmers of the state. To this end the members of the State

Club have formed County Clubs which hold annual meetings for the benefit of the farmers of the community. To quote from the annual address of its president: "The School of Agriculture is an institution of the farmers, for the farmers, and supported in a large measure by them, and each student of the School should use his knowledge to better the conditions about him. The State has invested from one to several hundred dollars in his education and expects to realize on that investment by the knowledge which he will distribute."

The Agricultural Experiment Station

STATION OFFICERS.

WM. M. LIGGETT, *Director.*

J. A. VYE, *Secretary.*

EXPERIMENTAL CORPS.

SAMUEL B. GREEN, B. S., *Horticulturist.*

HARRY SNYDER, B. S., *Chemist.*

T. L. HAECKER, *Dairy Husbandry.*

M. H. REYNOLDS, M. D., V. M., *Veterinarian.*

ANDREW BOSS, *Agriculturist and Animal Husbandry*

FREDERICK L. WASHBURN, M.A., *Entomologist.*

J. A. HUMMEL, B. Agr., *Assistant Chemist.*

COATES P. BULL., B. Agr., *Assistant in Agriculture.*

A. G. RUGGLES, M. A., *Assistant Entomologist.*

A. J. MCGUIRE, B. Agr., *Superintendent, Grand Rapids.*

D. A. GAUMNITZ, M. Agr., *Assistant in Animal Husbandry.*

A. D. WILSON, B. S. Agr., *Assistant in Agriculture.*

E. C. PARKER, B. S. Agr., *Assistant in Agriculture.*

WM. ROBERTSON, B.S., *Superintendent, Crookston.*

C. C. LIPP, D. V. M., *Assistant in Veterinary Science.*

The bulletins of this Station are mailed free to all residents of this state who make application for them.

The Agricultural Experiment Station of the University of Minnesota was established by National and State legislation in 1887. The function of the Experiment Station as set forth in the Hatch Act is "to aid in acquiring and diffusing among the people useful and practical information on the subjects connected with agriculture, and to promote scientific investigation and experiment respecting the principles and applications of agricultural science." The funds provided by the National Government have been supplemented recently by the Adams Act which will ultimately provide \$15,000 annually, and appropriations for special lines of experimental work have also been made by the State Legislature.

The Experiment Station is located at University Farm, St. Anthony Park, and is one of the Divisions of the Department of Agriculture of the University of Minnesota, and the officers of the station are also professors and instructors in the School and College of Agriculture. The chief

executive officer of the station is the Director who is also Dean of the College of Agriculture. Affiliated with the main station are a score or more of trial stations maintained by the State Horticultural Society. The Experiment Station also carries on co-operative tests and investigations with the U. S. Department of Agriculture and with farmers in various parts of the State. The Station has published since its organization in 1887, one hundred regular, twenty-six press and fifteen class bulletins.

The principal lines of work conducted at the station are as follows: Chemistry of soils and farm crops; field experiments—rotations, tests of varieties of cereals and forage crops, time and depth of seeding grains and amount of seed, methods of seeding grasses; horticultural—tests of varieties of fruits and vegetables, use of wind-breaks, testing hardy stocks for apple trees, improvement of native fruits; forestry; diseases of plants; food and nutrition of man; plant and animal breeding; feeding experiments; diseases of animals; entomology; dairying; farm management and farm statistics.

EXPERIMENT FARM AT CROOKSTON.

To provide for the conditions existing in the northwestern part of the state an experiment farm was established at Crookston in 1895. It was located about a mile north of the city and is provided with 480 acres of land, besides barns, machinery, live stock and the necessary equipment for carrying on experimental work adapted to this locality. It is in connection with this farm that the Crookston School of Agriculture has been established.

EXPERIMENT FARM AT GRAND RAPIDS.

The legislature of 1895 also provided for a second experiment farm to make possible a more thorough study of the agricultural conditions of the northeastern portions of the state. This farm was located at Grand Rapids April 16, 1896, and lies two miles east of the village. It contains approximately 375 acres of land, with the necessary farm equipment consisting of dwelling house, barns, machinery, live stock, etc.

Publications of the Department of Agriculture

BULLETINS OF THE EXPERIMENT STATION FOR 1906. ANNUAL REPORT FOR 1906.

GENERAL BULLETINS:

- No. 94 Soil Investigations.
 1 Fertilizer Tests with Wheat and Corn.
 2 The Loss of Nitrogen from Soils.
- No. 95 Some Common Weeds and Their Eradication.
- No. 96 Ornamental Trees, Shrubs, and Herbaceous Plants in Minnesota.
- No. 97 The Cost of Producing Farm Products.
- No. 98 Stable Ventilation, Purpose, Scope, and Need for Such Work.
- No. 99 1 The Calculated and Determined Nutrients of Rations.
 2 The Digestibility and Value of Emmer.
 3 The Heat Producing Value of the Crude Fat of Fodders and Grains.
- No. 100 The Cabbage Maggot and Other Injurious Insects of 1906.

PRESS BULLETINS:

- No. 25 Results of Work of 1905 with the Cabbage Maggot. Suggestions to Growers of Cabbage, Cauliflower, and Radishes.
- No. 26 An Entomological Calendar.

Students

STUDENTS 1906-7.

Intermediate year	11	
A Class	91	
B Class	146	
C Class	316	
		564
Farmers' Short Course	82	
Dairy School	106	
		752
College course	72	
Total in Department of Agriculture	824	
Less 5, twice counted	5	
TOTAL	819	

"INTERMEDIATE YEAR," 11.

Billings, Carlos R., Audubon.	Lathrop, Orley K., Hugo, R. 29.
Dahlquist, Henry D., Warren.	Perkins, Bert B., Monticello.
Gillis, James R., St. Anthony Park.	Schrepel, Minnie A., LeSueur.
Hille, Hans O., Webster.	Sonstegard, Peter O., Georgeville, R. 1.
Hjermstad, Morten, Balaton.	White, Frank W., Marshall.
Krogh, George F., St. Anthony Park.	

"A" CLASS, 91.

Anderson, Reuben W. E., Lindstrom.	Haywood, Ralph M., Minneapolis.
Ashworth, Harold E., Anoka.	Higgins, Bradley C., Levant, Maine.
Atz, Lloyd A., Farmington.	Holden, N. Dee, Amboy.
Bassett, Morton H., Rushmore.	Jacobson, Mabel L., Baldwin, Wis.
Belgum, Ella H., Farwell.	James, Edwin, Glenwood.
Berg, Joseph H., Willmar.	Johnshoy, Selma Helena, Starbuck.
Bohanon, Charles A., Minneapolis.	Johnsrud, Peder L., Spring Grove.
Brandt, Henry P., Morris.	Keller, Martha K., Dundas.
Brown, Edward W., Luverne.	Kern, Harry Elsworth, Minneapolis.
Carlisle, Clifford A., Stacy.	Kronlokken, Martha G., Renville.
Carpenter, Paul J., Sleepy Eye.	Lamb, Eva J., Mazeppa.
Chermak, Mabel C., Chatfield.	Lane, Dwight J., Minnetonka.
Chermak, Minnie, Chatfield.	Lewis, Pauline L., Long Lake.
Clark, Scott G., Morris.	Lowe, Florence L., St. Anthony Park.
Cleator, Fred W., Minneapolis.	Lundgren, Magda E., Excelsior.
Comings, George H., Eau Claire, Wis.	Lundholm, Agnes M., St. Paul.
Dayton, George N., Minneapolis.	Lydiard, Susie C., Long Lake.
Drysdale, Clarence, St. Charles.	Marple, Paul A., Wendell.
Durkee, Flora B., Hancock.	Marsden, Viola E., Edgerton, Wis.
Erb, Thomas H., Clarence, New York.	Maylott, George A., Hancock.
Evans, Catherine M., Merriam Park.	Mayne, Mac H., Maple Lake.
Field, Carl, Nora Springs, Iowa.	Miller, Estella A., Excelsior.
Field Martin, Nora Springs, Iowa.	Monson, Irving A., Elbow Lake.
Foslien, Theodore, Garfield.	Monson, Laura L., New London.
Gaumnitz, Carl, St. Cloud.	Moore, Walter M., Merriam Park.
Gilles, De Witt C., Minneapolis.	Nicholson, Ivy M., St. Paul.
Greenwalt, Dorothy A., Withrow.	Norling, Albert L., Svea.
Greenwalt, James A., Withrow.	Pengilly, Mary E., Shakopee.
Halvorson, Emily J., Norway Lake.	Peterson, Edwin R., Willmar.
Harper, Sidney R., West St. Paul.	Peterson, Elwin L., Olivia.
Haw, John W., Superior, Wis.	Peterson, John M., Dawson.
Held, Julius W., St. Louis Park.	Peterson, Walter I., Canton.

Phillips, Ellen A., Excelsior.
 Phillips, Richard, Le Sueur.
 Potter, Olive M., Springfield.
 Quam, Oscar A., New London.
 Robbins, Leon H., Clear Water.
 Robinson, Alta E., Merriam Park.
 Samuelson, Levi W., Lafayette.
 Sandager, Martin N., Belview.
 Sauby, Julia T., Elbow Lake.
 Scott, Warner C., Minneapolis, R. 3.
 Shelley, Ella E., Hanska.
 Sherman, Alton C., Clinton.
 Solhaug, Louis G., Starbuck.
 Stickney, Horace T., Clear Lake.

Strombo, Mattie P., Dalton.
 Stuhr, Anna H., Buffalo.
 Swedberg, Jasper I., White Bear Lake.
 Thom, John R., Stewart.
 Thompson, Norris R., Cottage Grove.
 Titrud, Ole Lee, Cokato.
 Tompte, George A., Sacred Heart.
 Trieloff, Erich C., Carver.
 Underleak, Frances M., Chatfield.
 Venzke, Harry E., Cardigan Junction.
 Ward, Guy H., Carver.
 White, Winnifred E., Winnebago.
 Wilcox, William W., White Bear Lake.

"B" CLASS, 146.

Adkins, Alice E., Minneapolis.
 Ahlquist, Margaret E., St. Paul.
 Albers, Mary W., Northfield.
 Allan, William D., Little Falls.
 Anderson, Agnes E., Alexandria.
 Anderson, Elmer O., Alexandria.
 Anderson, Fred A., Minneapolis.
 Bacheller, Herbert S., Forest Lake,
 R. 26.
 Beckstrand, Andrew C., Brookfield,
 R. 1.
 Berg, Alma, Minneapolis.
 Bofferding, Clara S., Minneapolis.
 Bouman, Ado, Minneapolis.
 Butterfield, Elsie M., Faribault.
 Calkins, John E., Imogen, R. 1.
 Cantwell, Wm. F., White Bear.
 Carpenter, Fred B., Sleepy Eye, R. 5.
 Charles, Ernest H., Hancock.
 Church, George H., St. Paul.
 Cleland, Edgar J., Waseca.
 Cole, Mary E., New York Mills.
 Colombe, Robert D., Little Falls.
 Cooper, Percy E. R., Sta. F., R. 5,
 Minneapolis.
 Cowin, Alton B., Minneapolis.
 Cranmer, Max A., Duluth.
 Cross, Harrison J., Childs.
 Demann, Frank A., Lonsdale, R. 2.
 Denison, Ena L., Faribault, R. 7.
 Dorn, Ivan C., Brooklyn Center.
 Dow, Charles F., Worthington.
 Durkee, Philander A., Hancock.
 Eklund, Carl J., Brookston.
 Englestad, Louise E.,
 Thief River Falls.
 Engstrand, Adolph G., Dawson.
 Enright, John P., Rose Creek.
 Finkbinder, David E., Royersford, Pa.
 Flaten, Mabel, Granite Falls.
 Follingsstad, Henry A., Zumbrota,
 R. 6.
 Forbes, Charles S., W. Side Sta.,
 St. Paul.
 Gaumnitz, Emma M., St. Cloud, R. 1.
 Gee, Merrill H., Minneapolis.
 Gillingham, Emilie J., St. Paul.
 Hall, Fay E., Morris.
 Hall, Jessie M., Minneapolis.
 Hancock, Morris W., Mankato.
 Hanscome, Clarence P.,
 Brooklyn Center.
 Hanson, Willie H., Big Lake.

Harrison, Earl D., Osseo, R. 1.
 Hart, Iva P., Farmington.
 Haslerud, Oliver, Rushford, R. 3.
 Hasslen, Anna, St. Paul.
 Hazleton, Lyman W., Cutler.
 Helgemoe, Julia E., Canby.
 Herum, Haldor C., New Centerville,
 Wis.
 Hickman, Emmett E., Minneapolis.
 Holmquist, Oscar W., Dawson, R. 1.
 Holt, Harry G., Delhi.
 Hovde, Frederick T., Hanska.
 Howard, Burt B., Madelia.
 Hunt, Florence A., St. Cloud.
 Hunt, Fred K., St. Cloud.
 Huseby, Bennie J., Adams.
 Irvine, Robert, St. Paul.
 Johnson, Clara V.,
 New Richmond, Wis.
 Johnsrud, Clara L., Spring Grove,
 R. 3.
 Johnston, Theo. H., Madison.
 Jones, Clarence A., Duluth.
 Jones, Myrtle M., Le Sueur, R. 6.
 Keller, John W., Dundas, R. 1.
 Kelley, Lloyd S., Markville.
 Kilham, Addie F., St. Paul.
 King, Edwin H., Spring Valley, R. 4.
 Lambert, Lenora M., Withrow.
 Lane, George E., Minnetonka, R. 2.
 Larson, Henrietta A., Ulen, R. 1.
 Lathrop, Alden B., Hugo, R. 29.
 Laughlin, Lee, Ada.
 Leathers, Stanley W.,
 Brooklyn Center.
 Lewis, Roy, Lewisville.
 Linde, Ernest A., Abercrombie, N. D.
 Linder, Leopold S., Mankato.
 Loegering, Aloysius J., Long Prairie.
 Lundgren, Wm. A., Excelsior, R. 3.
 Lundquist, Mabel V., Winthrop.
 Lyman, Walter S., Clinton.
 McCurry, Joseph H., Westport.
 Marquardt, Minnie E., St. Paul.
 Maylott, Eugene A., Hancock, R. 2.
 Miller, LaVerne A., St. Paul.
 Monson, Clara, Kenyon, R. 4.
 Monson, Grace Viola, Elbow Lake,
 R. 2.
 Nash, Floyd E., Robbinsdale.
 Nelson, Emil R., Canby.
 Nelson, Ida C., Alexandria.
 Noltmier, Mark, Hamline.

O'Bryan, Allen P., Little Falls.
 Oleson, Victor, Perley.
 Olson, Luther E., Cannon Falls, R. 8.
 Orton, Herbert O., Elk River.
 Overlie, John E., Wrenshall.
 Parish, David A., Mondovi, Wis.
 Pattee, Ralph E., Minneapolis.
 Paulson, Emil, Windom.
 Pedrick, Wm. H., Minneapolis.
 Person, Fred A., Withdraw.
 Peterson, Alice B., New Ulm, R. 3.
 Peterson, Fred O., Olivia.
 Potter, Reuben M., Springfield.
 Reasoner, Margretta, New Brighton.
 Rice, Edson C., Lewiston.
 Ricks, Nelson D., Minneapolis.
 Ringrose, Lura, Hancock.
 Robertson, John E., Appleton.
 Rollefson, Theo. S., Clarkfield.
 Ruth, Anton C., Morgan.
 Routhe, Walter L., Morgan.
 Sagnes, Lena H., Sacred Heart, R. 2.
 Sargent, Ray L., Red Wing, R. 2.
 Schmidt, Wm. A., Osseo, R. 1.
 Selbig, Florence M., St. Paul.
 Sheaff, Phillip L., Stillwater.
 Shumway, Frank E., Minneapolis.

Smith, Wycliffe M., St. Paul.
 Spence, Alice V., Hamilton, Ill.
 Spence, John C., Hamilton, Ill.
 Squire, Homer H., Hanley Falls.
 Staples, Alice M., W. Side Sta., St. Paul, R. 2.
 Staples, Myrtle C., W Side Sta., R. 2., St. Paul.
 Stepka, Sadie M., Minneapolis.
 Strand, Elmore A., Ada, R. 2.
 Swain, Lawrence B., St. Paul.
 Swanson, Robert J., Dassel.
 Thoe, Bertha F., Hayfield.
 Thordsen, Clara, Hanska.
 Trieloff, Hattie L., Carver.
 Trondson, Theo. H., Lakefield.
 Trow, Clinton F., Glenville.
 Turner, Esther May, St. Peter, R. 1.
 Valleau, Dorney W., St. Anthony Park.
 Van Doren, Amy L., Farmington.
 Watkins, Walter O., Carlton.
 Webber, Steven B., White Bear.
 White, Sherman L., Marshall.
 Wilkins, Chester A., Minneapolis.
 Wilson, Lillie May, Granite Falls, R. 1.
 Wolfe, Sydney J., Morristown.
 Wright, Albert D., St. Cloud.

"C" CLASS.—316.

Aakre, Clara, Hayfield.
 Adley, Charles L., Northome.
 Agre, Martin, Sacred Heart.
 Ahlers, John B., New York Mills.
 Ainsworth, Walter S., Minneapolis.
 Albee, Charles B., Caledonia.
 Albers, Walter, Northfield.
 Albertson, Rudolph, Lamberton.
 Allen, Percy R., Winona.
 Ames, Hazel E., Hutchinson.
 Anderson, Esther J., Minneapolis.
 Anderson, George M., Minneapolis.
 Anderson, Jessie L., Dell Rapids, S. Dak.,
 Anderson, Lillian L., Lindstrom.
 Anderson, Orley E., Medford.
 Anderson, Phillip A. W., Forest Lake.
 Anderson, Raymond E., Maple Plain.
 Anderson, Sophus H., St. Anthony Park.
 Anderson, Walter Roy, Belgrade.
 Arndt, Pauline M., Crystal, N. Dak.
 Arneson, Joseph, Canton, R. 1.
 Arny, Albert C., St. Paul Park.
 Ashbach, Otto B., Ada.
 Austin, Florence M., Winnebago.
 Backer, Roy F., New Ulm.
 Baker, Matt H., Wood Lake.
 Barsness, Alfred, Brandon.
 Bartlett, Irving J., Mound.
 Beard, Lee A., Kasson.
 Behlen, Henry W., Appleton.
 Benson, Edwin B., Jackson, R. 4.
 Berg, Edgar F., Dundas.
 Billings, Bessie A., Audubon.
 Blackburn, Robert A., Royal, Neb.
 Blackburn, Ralph C., Royal, Neb.

Bolkcom, Harry G., Sta. F., R. 1, Minneapolis.
 Bornhoft, George C., Arcola.
 Boudrye, Ada A., Granada.
 Bredvold, Jacob S., Belview.
 Brekken, Ole, Sacred Heart.
 Briggs, George M., Houston.
 Briggs, Mary O., Houston.
 Brown, Anna B., Pipestone.
 Brown, Mabelle C., Pipestone.
 Brownell, Max C., LaCrosse, Wis.
 Brummer, John, Renville.
 Buck, Cecil, Minneapolis.
 Burfeind, Arthur H., Minneapolis.
 Bushard, Francis, New Ulm.
 Busse, Florence A., Merriam Park, R. 8.
 Busse, Rose Olive, Merriam Park, R. 8.
 Butterfield, James, Long Lake.
 Byrne, Vincent M., Ruscomb Sta., Ont.
 Calkins, Clara A., Imogen, R. 1.
 Cantine, Sarah A., Walnut Grove.
 Carlson, Elvira S., Minneapolis.
 Carlson, Mabel H., Minneapolis.
 Cass, Lucilla, Brainerd.
 Charlwood, H. J., London, Eng.
 Chase, Elizabeth M., Farmington.
 Chase, Vere E., Minneapolis.
 Chester, Amanda O., Osseo, Wis.
 Christopherson, Edna H., Sioux Falls, S. D.
 Churchill, Charles P., Fort Dodge, Ia.
 Clark, Miles D., St. Paul.
 Coburn, John M., Pipestone.
 Connick, Bertha J., Westbrook.
 Corser, John, Minneapolis.

- Craik, William C., Edina Mills.
 Crary, Frank H., Northfield.
 Crippen, Lee A., Langdon, R. 16.
 Critchfield, B. H., Minneapolis.
 Croxen, John B., Monticello.
 Cryslser, Flossie W., Sioux Falls, S. D.
 Dahlberg, Oscar F., Minnetonka.
 Danielson, Daniel,
 East Grand Forks, R. 1.
 Davis, Clinton T., Akeley.
 Dawson, Vincent, St. Paul.
 Dewar, Archibald F., Lewisville.
 Doten, Grace E., Minneapolis.
 Dubbles, Joseph, Viola.
 Durland, James, LaCrosse, Wis.
 Eggers, Edward, Cologne.
 Ehlers, Frederick L., Marshall.
 Eid, Otto J., Granite Falls.
 Einarson, Baldwin, Duluth.
 Ekelund, Herman A., Minneapolis.
 Eklund, Nels A., Brookston.
 Epperson, Hugh W., Brookston.
 Ericson, Dwight S. E.,
 Goodhue, R. 6.
 Erickson, Richard I., Stillwater.
 Faulk, Ellen V., Willmar.
 Ferraby, Ethel S., Minneapolis.
 Fleming, Albert, St. Paul.
 Foster, Benjamin, Marshall.
 Francis, Merritt, Minneapolis.
 Fruechte, Louis H., Eitzen.
 Gammon, Lee M., Excelsior, R. 3.
 Garrison, Elda, Hamline.
 Giere, Constance B., Sacred Heart.
 Gilbertson, Clara A., Ada.
 Gillingham, Alma E., St. Paul.
 Goenner, Henry H., Clear Lake.
 Golberg, Germanda E., Kasson.
 Grimm, Ida L., Hector.
 Grimsgard, H., Grove City.
 Grinols, Ross C., St. Cloud.
 Hagen, Cora S., Granite Falls.
 Hagen, Nellie C., Hagan.
 Hagen, Norman, Granite Falls.
 Hall, Jennie F., Buffalo Lake.
 Hallan, Henry A., Spring Grove.
 Halvorson, Mabel A., Norway Lake.
 Hamilton, Vida L., Brooklyn Center.
 Hammerberg, Arvid, Shafer.
 Hanson, Clarence J., Hutchinson.
 Hardesty, Frank J., Minneapolis.
 Harris, Geo. E., Marshall, R. 3.
 Harvey, Charles I., St. Paul.
 Hastad, John L., Appleton.
 Hauenstein, Irma, New Ulm.
 Havreberg, Arne, Briceyn.
 Heinecke, Geo. H., Appleton.
 Helgeson, Emil G., Bruce.
 Hendrickson, Wm., Northfield.
 Henry, John R., Chatfield.
 Herum, Norman S., River Falls, Wis.
 High, Herman, New Ulm, R. 3.
 Highum, Henry B., Rushford.
 Hinshaw, Guy M., St. Paul.
 Hodorff, Gustave, Dixville.
 Hoffman, Ernest D., Marshall.
 Holbrook, David W., Markesan, Wis.
 Holden, Edwin B., Corson, S. D.
 Holmberg, Katherine M., Minneapolis.
 Holmberg, Mabel O., Minneapolis.
 Hordum, Florence A.,
 Merriam Park, R. 8.
 Hovelsrud, S. Hjalmer, Lakefield.
 Huntley, Herbert C., Hancock.
 Jacobs, Flora A., Chaska.
 Jacobson, Cecile L., Madison.
 Jacobson, Emma C., Elmdale.
 Jacobson, Henry, Marshall.
 Jaquith, Harold H.,
 Minnetonka, R. 1.
 Johnson, Arthur Simeon, Harris, R. 2.
 Johnson, Henry A., Taylors Falls.
 Johnson, Joseph A., Center City.
 Johnson, Joseph H., Madison, R. 1.
 Johnson, Myron H., Goodhue.
 Johnson, Stella A.,
 Cannon Falls, R. 3.
 Kastama, Jalmer J., Deer Creek.
 Kenney, James, Beardsley.
 Kern, Frederick D., Minneapolis.
 Kirkwood, Elizabeth C., Wabasha.
 Kittleson, Edward, Litchfield.
 Knoll, Gustave C., Minneapolis.
 Knutson, E. George, St. Cloud.
 Kottke, Edward A., Hutchinson.
 Krefting, Carl L., Minneapolis.
 Kroeger, Carl H., New Albin, Ia.
 Krusemark, Clarence W.,
 St. Paul Park.
 Kuschel, Herman, Dixville.
 Kvalheim, Andrew, Whalan.
 Lamb, Harvey H., Mazeppa.
 Larsen, LeRoy E., Annandale, R. 1.
 Larson, Frank S., Northfield.
 Larson, Levina, Balaton.
 Larson, Sallie Marie, North Branch.
 LaRue, Mary E.,
 Elizabethtown, Ky.
 Lawrence, Frank E.,
 Litchfield, R. 4.
 Lefeber, Wilbur F., Wauwatosa, Wis.
 Lemke, Wm. A., Albert Lea, R. 4.
 Lenz, Valentine L., Albert Lea.
 Lien, Harry A., Montevideo.
 Lien, Oscar L., Renville.
 Lindall, Carl O. R.,
 Parkers Prairie.
 Lindquist, Nels W., Lamberton.
 Loftus, Grace M.,
 St. Anthony Park.
 Ludwick, Lottie, Hamline.
 Lund, John E. L., Walnut Grove.
 Lundeen, John E.,
 White Bear Lake, R. 1.
 Lyman, Richard E., Clinton.
 McCall, Arthur R., Minneapolis.
 McCarty, Raymond U.,
 Good Thunder.
 McCurry, Margaret E.,
 West Union, R. 1.
 McCurry, Myrtle V., West Union, R. 1.
 McKinney, Jesse A.,
 Indianapolis, Ind.
 McNee, William, Spring Valley.
 McNelly, Charles E., Caledonia.
 McNelly, Mary E., Caledonia.
 McNelly, Robert J., Caledonia.
 Mallory, Erna, Lakeville.
 Maltrude, Helen O., Granite Falls.
 Manahan, Mary D., Chatfield.

The University of Minnesota

- Manahan, Matthew, Chatfield.
 Manning, Nydia A., St. Paul.
 Mark, Levi, Goodhue, R. 5.
 Martensen, Elvina M.,
 Martensen, Wis.
 Mather, Wm. E., Faribault.
 Mattson, Elizabeth,
 St. Anthony Park.
 Mellenthin, Albert A.,
 Marshall, R. 3.
 Melwold, Dena, Fairfax, R. 1.
 Meyst, Bessie L., Minneapolis.
 Minton, Harry S., Francis,
 Sask., Can.
 Moak, Inez M., St. Paul.
 Monson, Mary C., St. Paul.
 Montgomery, Tracy W.,
 Minneapolis.
 Mortenson, Alfred T., Albert eLa.
 Murray, Margaret S., St. Paul.
 Myhre, Oluf, Spring Grove.
 Nahrang, John H., Lewiston.
 Nelson, Arthur O., Stillwater, R. 7.
 Nelson, Arthur S., Afton.
 Nelson, Ellen L., Hector.
 Nelson, Helmer N., Wood Lake.
 Nelson, Hilma F., Litchfield.
 Noltmier, Roy A., St. Paul.
 Noltmier, Warren H., St. Paul.
 Norman, Edwin C., Traverse.
 Nyberg, Minnie C., Hamline.
 O'Brien, Vincent, St. Paul.
 O'Leary, Louis, Beardsley.
 Olson, Burke A., Alberta.
 Ostendorf, Alford,
 Somerset, Wis., R. 2.
 Ostrem, Martin J., Lanesboro, R. 1.
 Ott, John C., Albert Lea, R. 4.
 Padden, Roscoe L., Stewart.
 Page, Clarence P., St. Paul.
 Palmer, Karl V., Harris.
 Papez, Rose B., Hector.
 Parker, Frank, Hamline.
 Partridge, Ruth H.,
 St. Anthony Park.
 Patten, Norman B., Minneapolis.
 Patton, Kenneth M., Superior, Wis.
 Peck, Frank W.,
 St. Anthony Park.
 Pederson, Inga M., Astor, Ia.
 Pengilly, Alice L., Shakopee.
 Pentz, Bertha E., Faribault.
 Pentz, Kenneth W., Faribault.
 Peterson, August W., Brookfield.
 Peterson, Ellen W., Lafayette.
 Peterson, Herbert C., White Bear.
 Peterson, Thorwold, Excelsior, R. 3.
 Phillips, Dinah S., LeSueur.
 Pike, Vida J., Marshall.
 Poore, Iantha E., Bird Island.
 Potter, Melvin C., Wahpeton, N. D.
 Qualy, Sarah E., Caledonia.
 Rasmusson, Nellie R., Willmar.
 Rentz, Della F., Morris.
 Richter, Edward A.,
 Montgomery, R. 1.
 Rignell, Agnes D., Winthrop.
 Robertson, Charles J.,
 Merriam Park, R. 2.
 Ruble, Rollo J., Fairmont.
 Russell, Hoy S., St. Anthony Park.
 Sargent, Clara, Red Wing, R. 2.
 Schreck, John P., Appleton.
 Schrepel, Leo C., LeSueur.
 Schwab, Francesca L., Bennettville.
 Schwantes, Anna Minnie, New Ulm.
 Sizer, Mary A., St. James.
 Skaar, Alfred, Hayward.
 Skalbeck, Joseph, Sacred Heart.
 Skoog, Lillian C., Willmar.
 Skoden, Harriet A., Lamberton.
 Smith, Ralph V., Parkers Prairie.
 Smogard, Bernhart, Madison, R. 1.
 Sontag, Geo. A., Somerset, Wis.
 Southmayd, Winthrop S., Braham.
 Spencer, Arthur, Beardsley.
 Squire, F. P., Hanley Falls.
 Standish, Wm. R., Minneapolis.
 Stark, Arthur, Harris.
 Stauffer, Clarence L., Winnebago.
 Stenson, Sophia, Wilder.
 Stewart, Clarence E., Forest Lake.
 Stone, Allen W., Park Rapids.
 Strand, Annie L., Ada.
 Strate, Wilbur J., New Ulm, R. 1.
 Sullivan, Jessie A., Minneapolis.
 Sundboom, Helen E., Mora.
 Thornton, W. A., Appleton, R. 1.
 Tibbitts, Lee E., Marshall.
 Titrud, Albert, Kokato.
 Tomlinson, Francis H.,
 Hutchinson.
 Torgrimson, Theofred, Hanska.
 Torne, Henry, Rich Valley.
 Tripp, Harry P., Beardsley.
 Turner, Amelia, H., St. Peter, R. 1.
 Turner, Evelyn M.,
 St. Louis Park, R. 1.
 Twedt, Swen A., Ulen.
 Twitchell, Inez G., Stacy, R. 1.
 Undlin, Ole, Madison, R. 1.
 Upham, Thomas M., Monticello.
 Utter, Gustaf W., Ceylon.
 Vagt, John, Jackson.
 Veblen, T. Alfred, Stillwater.
 Verbeck, Wilber L., New York Mills.
 Victor, Emmy M., Lindstrom.
 Viets, John J., Minneapolis.
 Voxland, Olaf L., Kenyon.
 Wakeman, Walter Earl, Marshall.
 Wallace, Arthur M., Spring Grove.
 Warwick, James T., Goodhue, R. 5.
 Washburn, Etta R., Minneapolis.
 Watson, Irene, Merriam Park.
 Weidt, Elsie M., Merriam Park, R. 8.
 Weinmann, Oren M., St. Paul.
 Wessel, Anthony A., White eBar.
 Westby, Sigurd, Bath, S. Dak.
 Westmark, Henry A.,
 Minnetonka Mills, R. 2.
 Wilson, Laura E., Clarkfield.
 Wilson, Walter A., Granite Falls.
 Workman, George, Millard.
 Wright, Charles R., Fergus Falls.
 Zastrow, John C., Vernon Center.

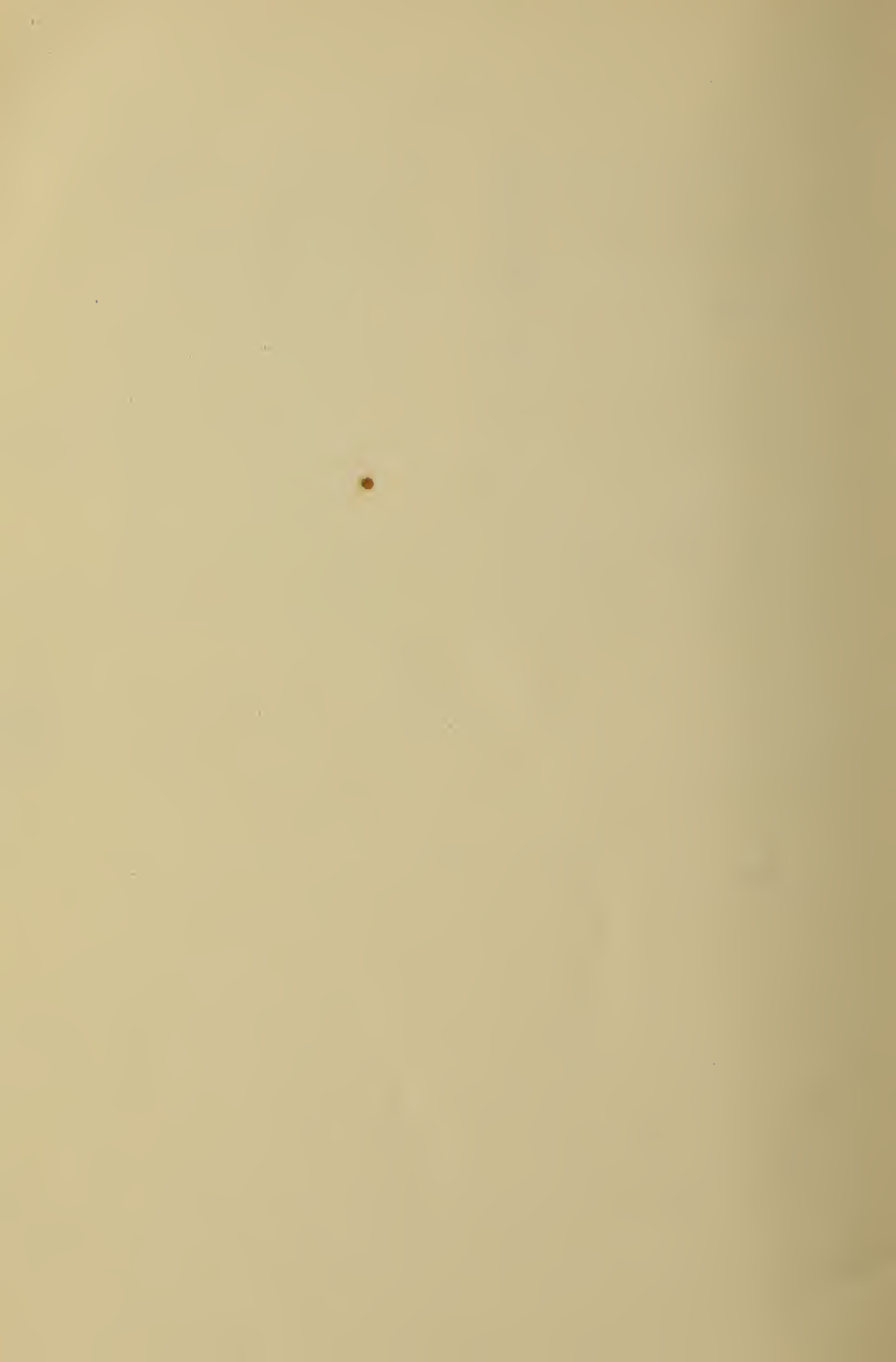
SHORT COURSE STUDENTS, 82.

Adams, Guy A., Owatonna.
 Anderson, Abram, Worthington.
 Anderson, John, Dodge Center.
 Austin, Perry, Worthington.
 Bahls, Ervin, St. Paul Park.
 Billings, J. P., Fergus Falls.
 Biorn, Aimer, Zumbrota.
 Blume, Irvine, Jordan.
 Bogren, C. O., Woodhull.
 Budde, Theodore G., Kellogg.
 Buell, K. W., Preston.
 Bush, Lloyd, Pine Island.
 Byrne, Fred, Hart.
 Carey, John, Minnesota Lake.
 Carlton, J. S., Owatonna.
 Chase, Budd E., Blue Earth.
 Cofer, A. J., Howard Lake.
 Coghlan, E. R., Wood Lake.
 Cook, Ernest, Westport.
 Dille, Oliver V., Dassel.
 Ditsch, Thomas, St. Bonifacius.
 Ekstrand, Peter W., Cokato.
 Ellingson, H. T., Hanley Falls.
 Elthon, Hans O., Nerstrand.
 Erlandson, Richard, Enoch.
 Evenson, Herman, Jackson.
 Fleener, Kate, Howard aLke.
 Gabel, Jacob, Afton.
 Hagen, H. M., Granite Falls.
 Hagen, John J., Farwell.
 Halls, Arthur, Hills.
 Handy, Harold B., Willmar.
 Hauge, Edwin, Pennoek.
 Hallickson, L. N., Aberdeen, S. Dak.
 Healy, H. W., Mapleton.
 Hellerud, John M., Nerstrand.
 Hille, A. J., Webster.
 Hinz, Wm., Zumbrota.
 Hjelle, Otto, West Valley.
 Holden, G. E. Petersburg.
 Holmberg, A. W., Avoca.
 Hunter C. C., Minneapolis.
 Iverson, Joseph, Ashby.
 Jensen, A. P., Minneapolis.
 Johnson, Augusta, New Ulm, R. 6.
 Keil, G. L., Breckenridge.
 Kemp, Orville, Hector.
 King, Eugene, St. Paul.
 Klinke, Charles, Taylors Falls.
 Knutson, Louis, Belview.
 Krueger, Fred, Stillwater.
 Lambert, Dan, West Concord.
 Leasman, Charles, Hector.
 Lind, Charles, Kennedy.
 Lindstrom, Emil, Cokato.
 Ludlow, H. M., Worthington.
 McGlashen, J. G., Edgerton.
 Melwold, Matilda, Fairfax.
 Naegli, Joseph, Elizabeth.
 Olson, Herbert, Lonsdale, R. 2.
 Olson, Otto, Emmons.
 Olstad, Theo., St. James.
 Parker, Frank, Hamline.
 Peterson, H. A., Sacred Heart.
 Robinson, H. A., Minneapolis.
 Rosenquist, O. H., Oakes, N. Dak.
 Roske, Ed. H., Olivia.
 Senechel, Herman, Drake, N. Dak.
 Shelley, Albert, Madelia.
 Shelley, Emil, Hanska.
 Storlie, Oliver, Reville, S. Dak.
 Tuvey, James, Taylor Falls.
 Vail, J. C., Fulda.
 Vollmer, Bertha, Sleepy Eye.
 Wamstad, C. O., Tracy.
 Webb, Geo. M., Morristown.
 Westerson, Oscar A., Minneapolis.
 Wiedeman, Henry, Sabin.
 Wiker, N. H., Mabel.
 Wolfer, C. R., Stillwater.
 Wolfer, H. J., Stillwater.
 Zastrow, John C., Vernon Center.

DAIRY SCHOOL STUDENTS, 106

Albertson, Edmund, Kellogg.
 Bringgold, Abram G., West Concord.
 Bettner, Henry, Owatonna.
 Baltes, Anton, Melrose.
 Bechtel, William, Brookfield.
 Bergren, Hjalmer, Cannon Falls.
 Beyl, Alfred, Osceola, Wis.
 Bohlilg, Charles, Spring Hill.
 Bondeson, Andrew, Minneapolis.
 Brown, Oscar, Annandale.
 Bush, Sidney, Cannon Falls.
 Cardinal, Felix C., St. Onge, S. Dak.
 Carlson, William, Harris.
 Chancellor, Harrison, Delano.
 Cleveland, William E., Minneapolis.
 Colin, John W., Rush City.
 Curtis, L. O., Lewiston.
 Dahlberg, Arnold, Clear Lake, Wis.
 Donney, W. H., Glencoe, R. 3.
 Drelow, W. E., Round Prairie.
 Duclos, L. F., Austin.
 Dummer, Otto, Brookfield.
 Erickson, Axel J., Browerville.
 Erickson, John, Bertha, R. 2.
 Gausmoee, Arthur S., Mankato.
 Gilmer, W. H., Royaltown.
 Gramith, Charles, Chaska.
 Granley, Emil O., Fertile.
 Gunstensen, Gustave, Fisher.
 Graunke, Louis K., Garfield.
 Greethurst, Charles, Lewiston.
 Germain, William, Sommerset, Wis.
 Hansen, C. M., Rockville.
 Heyes, John J., Oakland.
 Holzman, W. H., Hanover.
 Hovland, Gilbert, Fertile.
 Hovland, J. L., Edgerton.
 Jensen, Marinus, Darfur.
 Johnson, A. J., Cokato, R. 5.
 Johnson, Edward, Cokato.
 Johnson, Frank, St. George.
 Jonson, Oscar H., Dassel.
 Knobel, Harry A., Minneapolis.
 Krueger, Paul, Hutchinson, Kans.

- Kunze, Albert, St. Bonifacius.
 Langenfield, Matthew, Vermillion.
 Larsen, George, Lansing.
 Larsen, W., Frederick, S. Dak.
 Lindholm, J. E., Harris, R. 2.
 Lewis, L. H., Dawson, N. Dak.
 Lindstrom, William, Glenville.
 Logelin, Frank, St. Bonifacius.
 Lueth,, George A., Rush City.
 Lundborg, John, St. Paul.
 Madsen, Anton, Morgan.
 McCoid, G. B., Rushmore.
 Malmquist, Robert, Rush City, R. 1
 Mader, Carl, Minneapolis.
 Martin, E. J., Waukon, Ia.
 Mau, Otto R., Young America.
 Meyers, Luc, Minneapolis.
 Nelson, Ernest, Upsala.
 Nelson, A. H., Cokato.
 Nelson, F. N., Minneapolis.
 Nelson, John, Thief River Falls.
 Norsen, Nathaniel, Wheaton.
 Olson, Ole B., Northwood, Ia.
 Olson, Oscar, Carver.
 Olson, Peter J., Grandy.
 Osberg, George A., Dassel.
 Overland, Gynther, Bratsburg.
 Paulson, Warren G., Clayton, Wis.
 Peterson, G. C., Annandale.
 Peterson, Iver K., Minneapolis.
 Quade, Gustave, Sauk Center.
 Rickers, Julius W., Braham.
 Rogers, George B., Wyoming.
 Runke, William, Mapleton.
 Russell, Ernest, Tracy.
 Schneider, John, Almena, Wis.
 Schulke, W. F., Garfield.
 Schneider, Anton H., Lake Elmo.
 Schleppenbach, Anton, Melrose, R. 3.
 Schmidt, John, Victoria.
 Schreiner, Henry, Watkins.
 Schreeden, Herman, Meridian, Wis.
 Seeger, Ernest, Red Lake Falls.
 Seidel, Albert, Owatonna.
 Skare, T. H., Wegdahl.
 Siegel, Max, Bertha.
 Sommer, William R., Rush City.
 Steinke, J. H., Freeport.
 Stoughton, Harry E., Fisher.
 Swanson, J. E., Kindred, N. Dak.
 Swee, Martin A., Wanamingo.
 Simpson, James A., Lowry.
 Slaughter, Albert, St. Paul.
 Taftner, Oscar, Gary.
 Utigard, Enoch, Millville.
 Vollrath, Otto, St. Bonifacius.
 Wallin, E. G., Atwater.
 Welke, Frank A., New Auburn.
 Wittrup, Charles E., Pine City.
 Wolesky, Frank J., Owatonna.
 Wroble, Frank, Holdingford.
 Youngquist, Joseph, Northbranch, R. 1.





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